

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include changes to add Figure 6A. Figure 6A shows the parts of Figure 6, together with a generic illustration of intermediate part 39.

Attachment:      Replacement Sheet  
                     Annotated Sheet

REMARKS

The application has been amended and is believed to be in condition for allowance.

Claims 1-14 were examined.

Claims 1-14 remain in this application.

Specification

A substitute specification and a marked-up copy thereof is provided. No new matter is entered by way of this amendment.

Drawings

The drawings were objected to for not showing the "intermediate part" recited in the claims.

The attached sheet of drawings includes changes to add Figure 6A. Figure 6A shows a generic illustration of intermediate part 39. As the intermediate part 39 is illustrated generically, no new matter is entered.

Claims

Claims 1-14 were rejected under 35 USC 112, second paragraph as being indefinite.

The claims have been amended to remedy the stated bases of rejection. No new matter is entered.

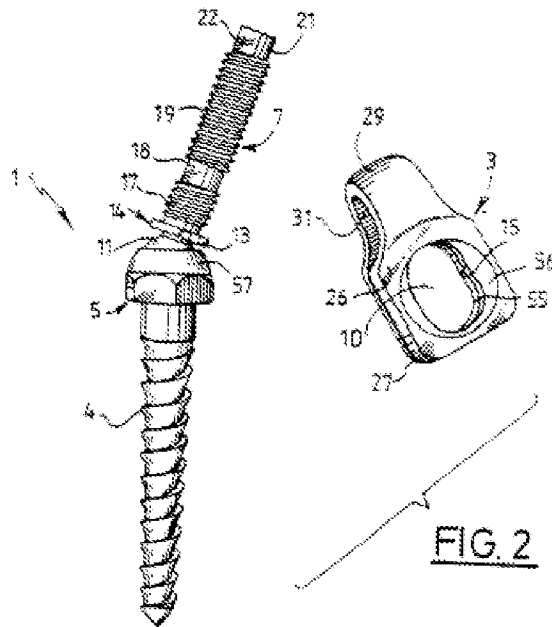
Withdrawal of the rejection is solicited.

# Brief Review of the Invention

An existing "polyaxial" anchoring element comprises a connecting part for connection to a linking rod and a base part for anchoring to a vertebra, the connecting part being articulated with respect to the base part.

The connecting part can be a threaded proximal slug or a "tulip"-shaped part. The articulated joint comprises a sphere and a cavity.

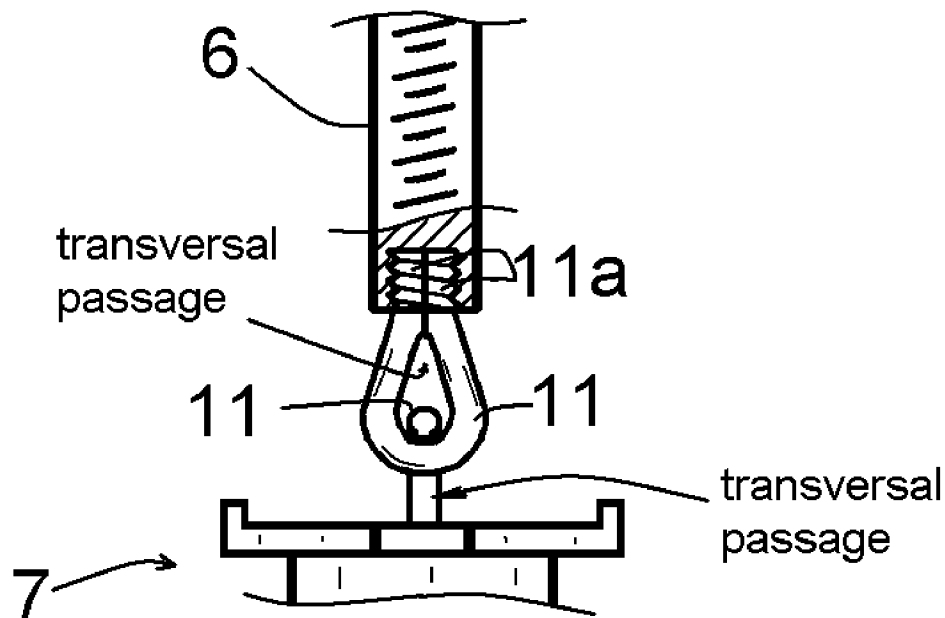
Reference can be made to US 6,267,765 which shows a "polyaxial" anchoring element 1 with a threaded proximal stud (shaft) 7 articulated with respect to an anchoring base part 4:



With the existing elements, the drawbacks are: limited play of the proximal slug or tulip part, conducting to difficulties for mounting, diffusion of metal particles in the

body, and complete rigidity of the equipment, which is not always desirable.

To overcome these drawbacks, in a bone anchoring element according to the invention, each of a connecting part 6 and a base part 7 comprises a transversal passage and a rigid transversal part 11 which direction is substantially perpendicular to the direction of said passage, said rigid transversal part of the connecting part or base part being inserted in the transversal passage of the base part or connecting part, and vice versa, in such a way that these rigid transversal elements are pivotable in these passages:



In this way, the articulated connecting part may have a very significant play, up to 180 degrees, while this play does not exceed 30 degrees in an existing device; the friction on the joint is considerably limited; and the vertebral osteosynthesis

device thus obtained enables a non-rigid, or flexible, assembly of the connecting rods with the anchoring elements.

Rejections Under 35 USC 102, 103

Claims 1-3, and 9-11 were rejected as anticipated by HOWLAND 5,545,166.

Claims 4, 6, and 12 were rejected in further view of LITTMAN 3,014,683.

Claims 13 was rejected in still further view of GANEM 6,290,703.

Claim 5 was rejected in view of HOWLAND and GANEM.

Claim 14 was rejected in still further view of LITTMAN.

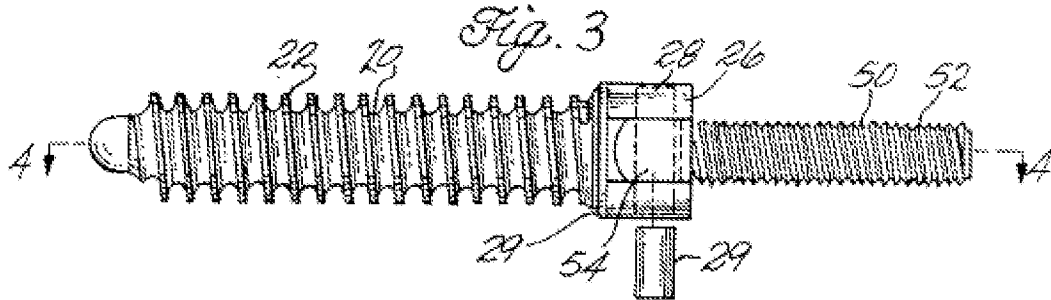
The rejections are traversed.

HOWLAND discloses a vertebral device comprising vertebral screws, e.g., see HOWLAND Figures 2-5.

Each screw comprises a base part 20 and a connecting part 50; the base part 20 includes a pair of ears 26 with holes 28, and the connecting part 50 includes a loop 54 having an aperture 56, this connecting part 50 being pivotally mounted on the base part 20 by means of a pin 29 inserted in the holes 28 and the loop 54.

It is indicated (column 3, lines 13-14) that the aperture 56 of the loop 54 is slightly larger than the diameter of the pin 29 so that the swing bolt 50 can pivot around the pin

29. It appears moreover on the figures that ring 54 is engaged in an adjusted way between the ears 26, see in particular figure 3:



The Official Action states that HOWLAND discloses a "polyaxial" screw, which is not correct. A polyaxial screw is a screw in which the proximal part is articulated, i.e., movable in a plurality of planes. On the contrary, the screw according to HOWLAND allows only a movement of pivot of the swing bolt 50, i.e. a movement in a single plane.

Moreover, according to the invention, both the rigid part of the connecting part (6) and the rigid part of said base part 7 are pivotable in the respective passages, allowing for a polyaxial articulation, whereas the screw according to HOWLAND only permits a pivot of the swing bolt 50, i.e. a movement in a single plane.

The specific results indicated above (very significant play of the articulated connecting part, friction on the articulated joint considerably limited, non-rigid or flexible assembly) obtained by the screw according to the present patent application are not obtained by the screw according to HOWLAND.

Thus, HOWLAND does not anticipate.

As to claim 2, HOWLAND does not disclose two rings being inserted into each other similarly to links in a chain; on the contrary, and HOWLAND does not disclose "links of a chain" but only a pivotal possibility of movement.

As to claim 3, HOWLAND does not disclose rounded surfaces of contact of one rigid transversal element with the other, enabling a rolling movement of a rigid transversal element with respect to the other.

As to claim 7, the pin 29 of HOWLAND is not described as being elastically deformable, and there is no means on the screw for dampening the movement of the swing bolt 50.

Additionally, the claims are believed patentable at least for depending from an allowable claim.

Allowance of all the claims is therefore solicited.

This response is believed to be fully responsive and to put the case in condition for allowance. An early and favorable action on the merits is earnestly requested. Should there be any matters that need to be resolved in the present application; the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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**APPENDIX:**

The Appendix includes the following item(s):

- ☒ - a Clean Listing of Claims
- ☒ - a Substitute Specification and a marked-up copy of the  
originally-filed specification
- ☒ - an Annotated and Replacement Sheet for Figure 6A of the  
drawings